# COMPUTERWORLD
# JOURNAL

## HEALTHCARE

# DRIVEN
## *by*
# DATA

*As reporting needs
become more involved,
providers are prescribing
data warehouse cures*
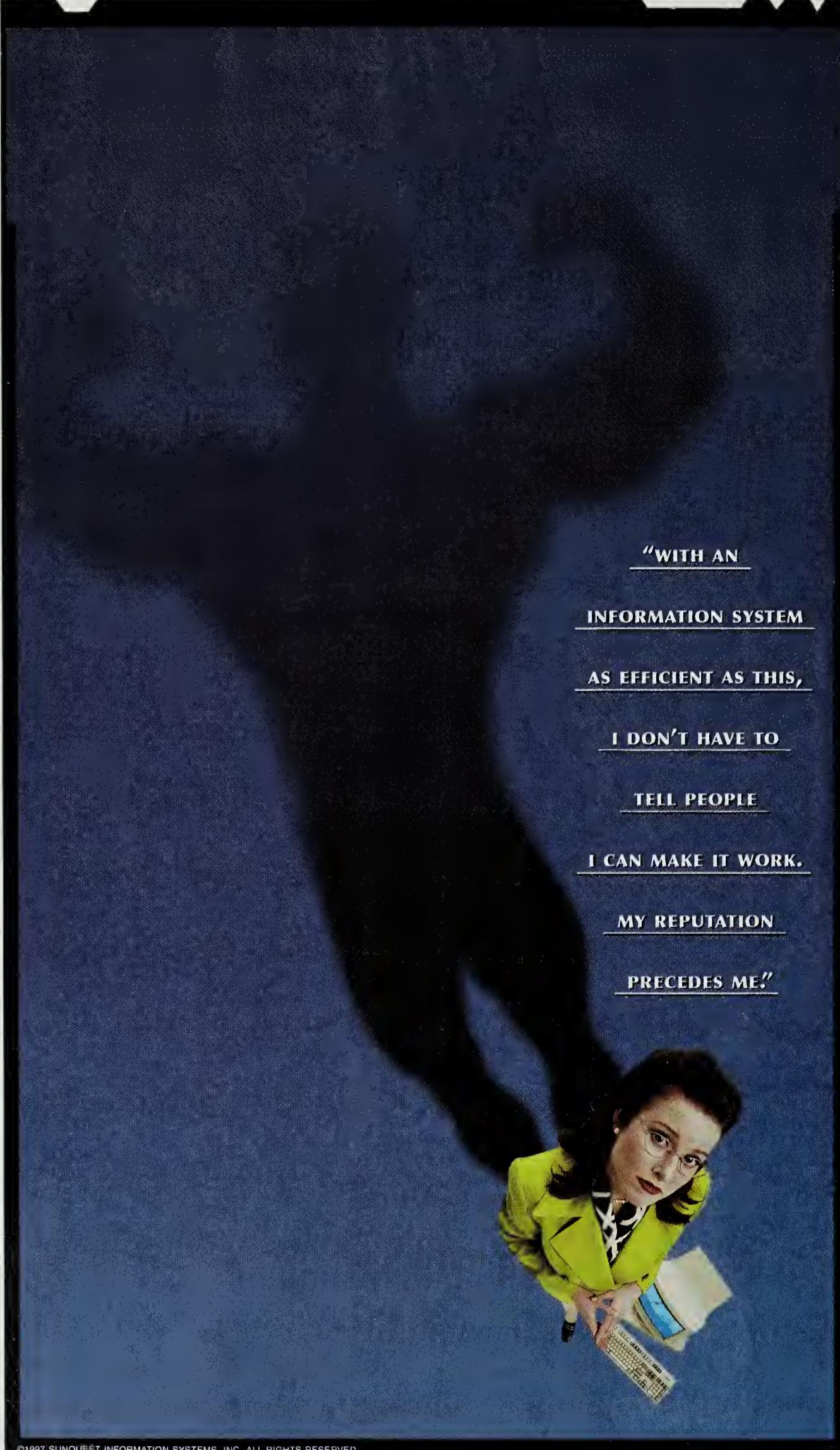
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## October 1997
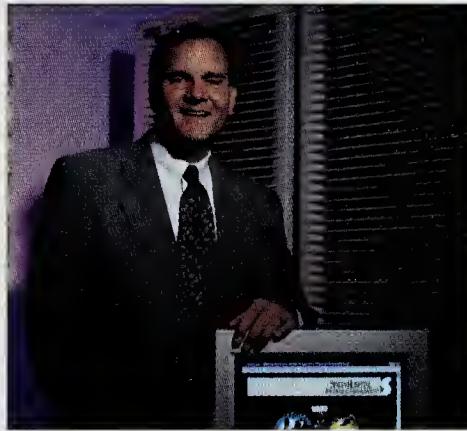
# vitalsigns

# Notes App Gives AIDS Center More Time for Patient Care

## Case workers see twice the clients with half the stress

BY SHARON WATSON

Douglas Canady, a social work case manager for the Milwaukee AIDS Project, is responsible for monitoring the health of more than 100 clients either infected with HIV or suffering from full-blown AIDS. He must also coordinate the services available to those clients through the Project's parent agency, the AIDS Resource Center of Wisconsin (ARCW).

That coordination once required Canady to burrow through two file cabinets over-stuffed with patient records, deciphering handwritten notes by other managers and reconstructing partial files.

Now, Canady logs on to his PC and opens Provide, a Lotus Notes-based application from Groupware Technologies, Inc. in Wauwatosa, Wis. He checks his electronic mail, which gives him a monthly to-do list: calls to make, progress notes to update, client problem alerts to follow up on. For example, a client may call needing to make travel arrangements to a clinic. As he talks, Canady pulls up a screen and generates referral letters via E-mail to the ARCW agency handling transportation. Chances are good the client will have the transport lined up that day, compared with a week or longer under the old system.

"I was afraid the computers would turn this into a business, but actually I find myself being more personable now, offering more time to my clients," Canady said. He said he can now handle six to eight clients a day, compared with three or four before Provide.

That's exactly the kind of productivity increase ARCW was hoping automation would provide, said Paul Milakovich, deputy director of administration and general counsel for the agency. From 1988 to 1995, case loads had more than doubled, to one manager for every 90 patients, but the center couldn't afford to add staffers. "But we refused to cut services," he said.

Milakovich was referred to Groupware by an ARCW board member. According to Groupware, ARCW was the perfect candidate for a Notes application. "It was clear we'd better make it a very adaptive system — one that doesn't care where the walls of the organizations are," said Bret F. Ballinger, Groupware's president.

The software includes a Notes Server Engine running under Microsoft Corp.'s Windows NT 4.0 and supporting 50 Intel Corp. Pentium-based Windows 95 workstations on a LAN. The software also supports dial-in access from remote locations. The server is logically partitioned, enabling the many ARCW agencies to share the same



**PROVIDE MAKES** *it easier for case managers to serve clients.*

database and easily transfer files or referrals as necessary, yet keep client data segregated.

Provide incorporates Wisconsin's state-defined AIDS standards of care, which detail activities and deadlines, such as the need to update case management plans every 60 days. The application treats these as parameters instead of hard code, so ARCW can change them as the state does.

To ensure consistent data across ARCW agencies, the Notes Server Engine supports data replication, routinely comparing the data files on the user's CPU with those in the server and synchronizing those that have changed on either. The replication is just of the field level data rather than the entire file, so it's extremely efficient, Ballinger said.

Milakovich hired a systems administrator and has spent about $300,000 on systems in a three-year period. He said the investment is paying off in improved data collection, greater efficiencies — without adding staffers — and better quality control.

"Clients don't get any easier," Canady said, "but I'm always telling new case managers how Provide will make their jobs much less stressful."

(See www.grouptech.com for specs on Provide.) ■

WATSON IS A FREELANCE WRITER IN CHICAGO SPECIALIZING IN HEALTHCARE AND TECHNOLOGY.

# RADIOTHERAPY TARGETS TUMORS

*IMRT helps doctors configure X-rays to 3-D tumor shape*

**BY TONY BAER**

Part of the search for a cure for cancer has been the development of more precise radiation techniques. The problem with conventional radiotherapy is it has never been precise enough to zap bad cells but spare the good ones. The problem is exacerbated by the twisting, random shapes that malignant tumors often take.

Consequently, radiation dosages have usually been limited by considerations for surrounding tissue. But might there be a way to tailor the shape of the X-rays to more effectively obliterate tumors?

Since 1995, New England Medical Center in Boston has been testing a new technology that might answer that question. Intensity Modulated Radiation Therapy (IMRT) shapes X-ray treatments based on three-dimensional geometric models generated by a client/server application. Last year, the FDA approved devices and software supporting IMRT. The $500,000 system, developed by Nomos, Inc. in Sewickley, Pa., runs on an eight-processor SPARCserver running SunOS 5.3 from Sun Microsystems, Inc. and a Pen-

tium client running the NextStep front end, linked via 100Base-T 100 bit/sec. Ethernet.

IMRT represents 3-D models of tumors based on the results of MRI, CT scans and other diagnostic data.

With the 3-D representation, the radiation oncologist delineates the target areas and radiation dosage levels by tissue area and type, with the application calculating the X-ray beam configuration to match the 3-D shape of the tumor. The results are 2-D and 3-D "maps" of the tumor delineated by "isodose" lines resembling the isobars of weather maps, showing how much radiation to direct at which portions of tissue. The physician then fine-tunes the doses.

To support the technology, radiation devices have been improved, with new models able to direct lines as small as 4mm across. Based on instructions the application downloads, the pencil-thin beams are combined to generate a properly shaped beam.

The new treatment has produced dramatic results, said Dr. David E. Wazer, director of the radiation oncology center at New England Medical. Initially applied to patients with few treatment options, the system proved safe and improved prognoses for many. This technology is especially

critical for head and neck tumors because of the need to protect the central nervous system. For instance, the system's precise targeting helped save the eyesight of a patient with a brain tumor.

Dr. Wazer said he expects IMRT to prove useful for problems such as prostate cancer that have been difficult to treat owing to the prostate's convoluted shape and its proximity to vital organs.

Mark J. Engler, Ph.D., chief clinical physicist at New England Medical, said the idea behind IMRT is not that new. In 1989, a British physicist proposed adapting a production technique for annealing crystals to tumor radiation treatments. You have to be very careful not to zap the structure of the crystal you want to anneal, so the radiation must be targeted closely. But it's one thing to do this to a crystal, whose shape is well-defined, and another to do it to tumors. It took several more years before client/server technology could place sufficient computing power onto a system small and affordable enough for a hospital clinic.

With the improving price/performance of client/server technology, Engler said, use of the technology should grow.

Wazer said, "We are very excited about this tool." He said the technology should reach widespread use in oncology centers in about five years. ∎

*BAER IS A FREELANCE WRITER IN BEDFORD, MASS.*

## How IMRT Works
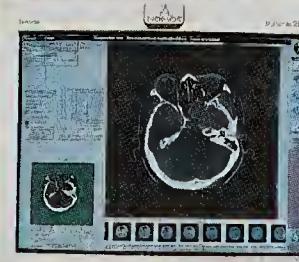


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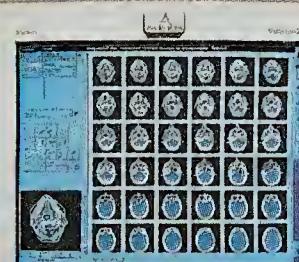


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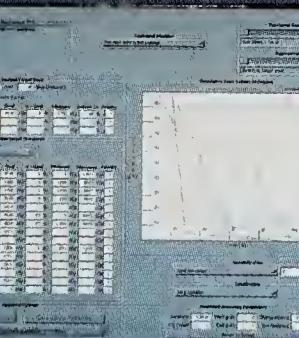


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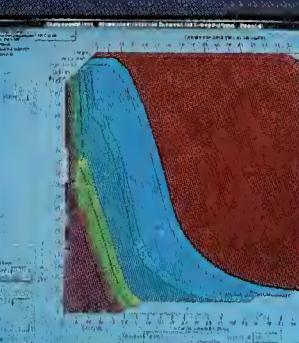


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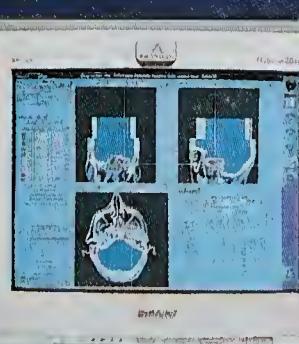


**PLANNED RESULTS**

# DRIVEN *by* DATA



**AS HEALTHCARE PROVIDERS' REPORTING NEEDS BECOME MORE INVOLVED, MANY ARE STARTING TO PRESCRIBE DATA WAREHOUSES AS A CURE**

**BY SHARON WATSON**

W hen it comes to creating, storing and using data, the average healthcare integrated delivery system has a lot in common with today's mega-supermarkets. Customers who want quick, ready-made meals head for the salad bar, akin to clinicians who want fast access to current patient data but don't want to assemble the pieces themselves.

Family chefs, though, may comb the market, selecting ingredients they'll try in various combinations, taking careful note of the results. That's not unlike the business analyst or clinical researcher running sophisticated queries to arrive at the true costs of services or to develop clinical pathways.

Just as supermarkets enable customers to eat on the spot or make from scratch, health-

care providers also take different routes to meet their users' data needs. For real-time, online data, and as underpinnings for computerized patient record projects, most are opting for clinical data repositories. "It's a real-time operational data store, with highly volatile data accessible from many points," said Jane Griffin, president and chief executive officer of Systems Techniques, Inc., a consulting firm in Atlanta.
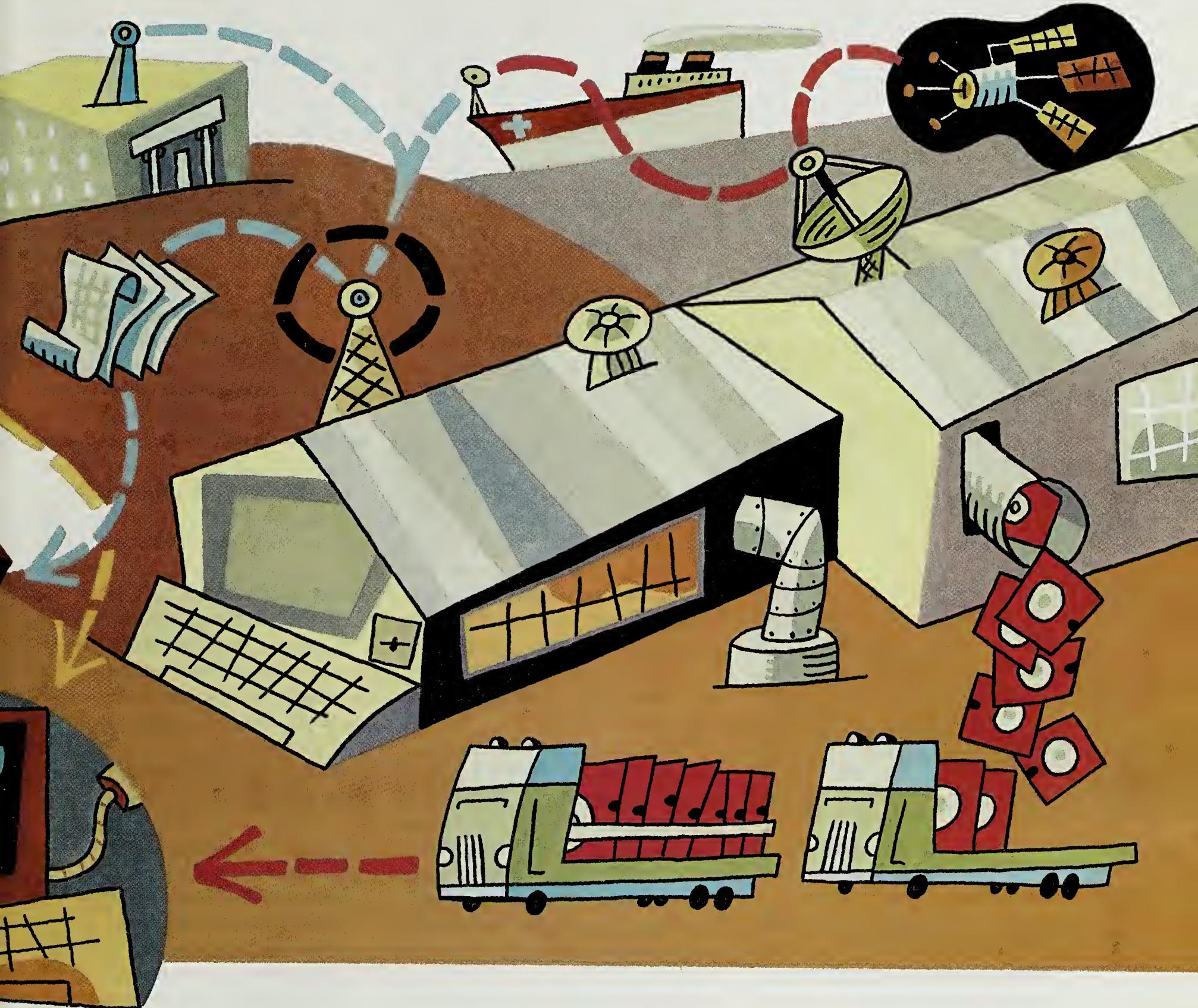
As provider reporting needs become more complex, many are looking at data warehouses. While warehouses are often built on the same relational database technology that serves clinical repositories, they contain different types of data, including clinical data scrubbed of patient identifiers,

financial data, external comparative data, etc. The separation of historical, statistical data from real-time information serves both "quick hit" and analytical users. "We don't want to bog down our database that provides care; you want rapid response on that, and if you start doing research against that, you're just going to kill it," said Patricia Becker, chief information officer at University of Chicago Hospitals in Chicago.

Managed care, with its pressure to make providers ever more efficient without sacrificing quality of care, is driving the need for more data and storage devices to optimize its delivery, providers agree. For instance, West Jersey Health, an integrated delivery system in Camden, N.J., can't in-

tegrate patient data from its home health, ambulatory surgery, three different physician practice management and hospital-based systems, let alone from systems affiliated providers might run, according to Marianne Charbonneau, West Jersey Health's CIO. "Yet to go into risk contracts, we need a repository of information we can share, regardless of what the main driver system is," she said.

In addition, she said, West Jersey Health wants to start evaluating its outcomes to see where and how it is providing the best care at the lowest cost. The twofold needs led West Jersey Health to agree to be a development site for Novius.ihn, a new reposi-
*Please turn to next page*

tory/warehouse product from Shared Medical Systems Corp. (SMS) in Malvern, Pa. The healthcare system is rolling out reporting capabilities on its financial and performance indicators to senior management and financial analysts this year. Next year, it will begin developing the clinical data repository and master patient index, Charbonneau said.

West Jersey Health isn't alone. In the 1997 annual HIMMS survey, 37% of respondents ranked clinical data repositories as their first- or second-highest application development priority this year, while 26% said repositories and/or warehouses had been among their Top 2 projects launched last year. These projects don't come cheap: The Ohio State University Hospitals have budgeted $3 million over three years to install a warehouse, putting it on the high end of

## WEB SITES

**OLAP COUNCIL, with white papers, glossary of OLAP tool terms**
www.olapcouncil.org

**DATA WAREHOUSING INFORMATION CENTER, with links to vendors, articles, white papers**
pwp.starnetinc.com/larryg/index.html

**DATA WAREHOUSING INSTITUTE, with tips on warehouse installation, case studies, articles**
www.dw-institute.com

costs that consultant Griffin said range from $600,000 to $4 million. Repository cost estimates fall into the same range.

The high price tags reflect the enormous complexity of the projects. Most healthcare industry repository and warehouse vendors sell what amounts to an empty relational database that comes with a recommended data model and data field templates. Before it can be of any use, the database must be populated, usually by feeding it with data already in other hospital systems or even direct keyboard entry. But before that can happen, providers must customize the data model to meet their clinical and business needs, then agree on a common vocabulary for the data elements deemed necessary. It's a process that involves not just technical staffers but an array of clinical experts, too.

All this work may happen on a grand scale, given the size of today's integrated delivery networks. For example, the repository and warehouse projects under way at the Hermann Health System in Houston will eventually encompass more than 100 primary care facilities and several different business entities, including the University of Texas Medical School.

"The theory was to create a healthcare network that would tie all that together — the primary, secondary and acute care settings," said David Tucker, CIO at Hermann. That structure required a repository and a vendor that shared the provider's vision of what an integrated delivery system should be, he said. Based on experience with Cerner Corp. in Kansas City, Mo., the hospital's lab and pharmacy systems vendor, two years ago Tucker took "a leap of faith" that Cerner could port its mainframe-based repository to the client/server platform the provider wanted. Cerner delivered, but it took longer than expected.

"We intended to have the system up in the pilot sites last fall and we didn't make it until February and March of this year, so the whole project has slipped about six months," Tucker said, attributing the delay to the vagaries of new product development. He estimated the repository would be available to users throughout the system by March 1998. Hermann has also begun work on its data warehouse, and first access to it is expected early next year.

Now piloted in four clinics with about 300 users, the Cerner Open Clinical Foundation (OCF) repository sits on an Oracle

Corp. database running on three Digital Equipment Corp. Alpha 8400s in a cluster. An SMS ADT system, the Cerner lab and pharmacy systems, a radiology system and a transcription service interface had already been feeding into a Cloverleaf interface engine, so Hermann linked that engine to the Cerner engine provided with OCF, said Anne LeMaistre, project executive for Hermann's Health Information Network.

One of the biggest selling points for Hermann was Cerner's OCF data model. A data model defines not only what data will be stored but also how various data elements relate to one another. Cerner's data model enables physicians to access a complete, integrated patient data set instead of looking up results from a variety of hospital systems. That feature enabled Hermann to adopt the model with very little modification, LeMaistre said.

### NO CLINICAL ESPERANTO

Even when a healthcare vendor provides a comprehensive data model, the provider still has to standardize what data goes into the model — no easy task in a business environment where something as basic as a "complete blood count" may be known by that name or as a "CBC" or as a test number. Hermann had already adopted the National Library of Medicine's clinical language, so its standardization process was fairly pain-free, LeMaistre said. Other providers were not so fortunate.

"The big challenge has been getting buy-in from clinicians on the terminology we use across specialties, subspecialties and patient populations," said Dennis Dassenko, vice president and CIO at the University of Wisconsin Hospital & Clinics in Madison.

So the provider spent a year and a half developing its "Ambulatory Data Set," a standard set of primary care patient data.

Similarly, physicians, dietitians, physical therapists and others at West Jersey spent nine months hammering out a cross-discipline admission assessment, Charbonneau said. This will be the start of a common language across the care continuum.

Once the terms are agreed on, most providers are relying on translations within interface engines to ensure that even if local systems continue to use their own clinical terms, the repository and/or warehouse terms will be uniform. Wisconsin uses SMS's Healthcare Term Dictionary, part of the

vendor's Lifetime Clinical Record repository, for that synonym support. The dictionary also contains allowable data values, display characteristics for the hospital's mix of character and graphical displays, and print displays, Dassenko said.

"If you don't go through those vocabulary efforts, the data's not portable, and it's not particularly useful for analytical purposes outside a specialty," Dassenko said. "A pediatrician, surgeon and neurologist all have to get the same value out of this data and be confident that it's meaningful and accurate."

Completing these tasks should ensure clean and consistent data and metadata — information about the stored data — in the repository. That's critical because a clinical repository often feeds into a warehouse. Also, some providers forgo building a separate warehouse structure for analytical reports. Instead, as at The University of Chicago Hospitals, they may mirror the repository data and use the duplicated structure for research or run queries against the repository, accepting the occasional performance degradation as the trade-off against the ex-

pense of building a warehouse, such as at the University of Wisconsin.
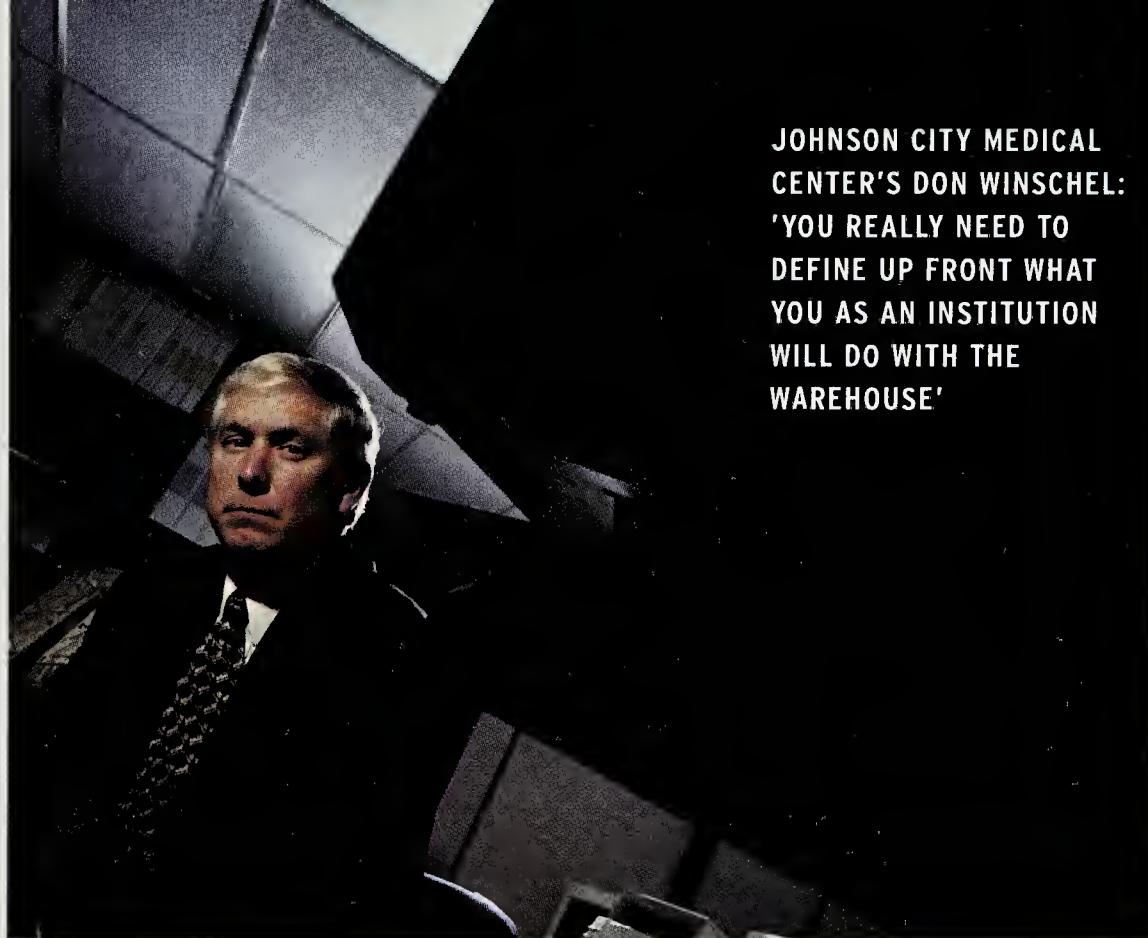
But, the CIOs pointed out, that performance drop becomes too frequent as queries requiring aggregated data increase and queries become more complex, involving data from financial, administrative and even external databases, such as the University Health Consortium's performance comparison statistics. The prevailing wisdom is that storing analytical data in a warehouse is the best way to serve business analysts and clinical researchers while keeping the clin-

# HEALTHY RISKS

**J**ust as the Midwest is known in the food and beverage industry as the toughest market for new products, so healthcare may be for database technology. Where other industries debate the merits of multidimensional databases and flavors of OLAP tools, such discussions seem muted in healthcare.

That's not surprising, given that many healthcare vendors just ported their data products to industry standards such as Sybase, Oracle and Microsoft's SQL Server. Plus, "data warehousing in healthcare is something of an unknown quantity," said Tim DePriest, senior manager at Deloitte & Touche Consulting Group in San Francisco. Providers are trying to understand the business impact of warehousing, while vendors await users' cues.

That said, some healthcare users do have experience with some key concepts, such as data marts. "A data mart is a focused grouping of data designed to meet specific business needs and may or may not be tied to a particular product," said Rebecca Kinney, senior consul-

tant at HBO & Co.'s GMIS product group.

The Ohio State University Hospitals have dozens of data marts, including several that track the financial data, market position and clinical performance of "centers of emphasis" such as cardiovascular and cancer services. While the marts have met many immediate reporting needs, they don't support the more complex queries clinicians and business analysts are asking for, said Cathy Bruno, CIO at the hospital. As most of the systems don't support queries across patient populations, she said, it would be hard to, say, identify all patients facing a given clinical risk factor.

Data across data marts isn't always consistent because they draw from different sources of data refreshed on various schedules. So Bruno plans on putting all the decision support data in a single warehouse.

Bruno's consultants have yet to advise on a warehouse structure. "Healthcare's use of warehouses is probably young enough that the industry hasn't run up against the limitations of relational technology," said Jim Klein, re-

search director of vertical applications for healthcare at Gartner Group, Inc.

He and other analysts say multidimensional data structures require users to know what answers they're looking for as they're building those structures. "That's a lot easier to accomplish in traditional sales analysis than with a healthcare claim," Klein said. "Providers are still learning how to drill down on those."

That leaves object-oriented databases, an intriguing concept to Blue Cross and Blue Shield of Maine, which is evaluating relational and object-based storage as potential replacements for the insurer's flat-file-based data warehouse. "You can provide so many more orientations through the objects and moving the objects around," said Elisabeth Keliher, manager of technical support and development for the East Portland, Maine-based payer. "With multidimensional databases, you still have a fixed database structure."

She said users can more easily understand combining objects to create queries than visualize multidimensional data structures. "That may be one way of improving our service to them — by offering the simplest model possible while still providing sophisticated data access behind the scenes," Keliher said.

ical repository optimized for fast response.

The different role of a warehouse means still more process analysis and data modeling must be done as it's built, providers said. "You really need to define up front what you as an institution will do with the warehouse," said Don Winschel, vice president and CIO at Johnson City Medical Center.

That 407-bed provider, which uses SMS's Lifetime Clinical Record repository, needed another mechanism for storing and shar-

The center identified nine business success factors, then focused on mapping processes and defining data elements for the three highest-priority areas: managed care, quality management and patient care delivery. The provider is also piloting reporting capabilities, such as enabling the Quality Assurance department to extract warehouse data using a system from Medi-Qual in Westboro, Mass. This phased implementation is deliberate, Winschel said.

"The warehouse is such a large, ongoing,

tools, among others, said Cathy Bruno, the provider's CIO (see story page H9).

"To make multidimensional data structures work, we need to know up front what questions people will ask," she said. An internal council of physicians — the sponsors for the warehouse project — have developed some queries, including "Tell me the patients who are over 50 who haven't had a mammogram in the past year" and "Tell me the patients who are diabetic and haven't seen an ophthalmologist in the past year." Bruno said the council also wants to track the efficacy of various clinical guidelines.

Giving enthusiastic clinicians such as these easier access to data is a big driver behind development of Web browser-style access and query tools, providers said. The University of Chicago Hospitals are testing a Web product from Greenbrae, Calif.-based Oacis Healthcare Systems, its repository vendor, that it hopes to give to referring physicians who might not have the high-powered workstations the primary Oacis viewing tools require, Becker said.

Several providers said the growing role of Internet technologies and a move toward industry-standard databases such as those from Oracle and Sybase, Inc. have opened the door for more vendors from outside healthcare's boundaries to target the industry with database products. The advantage is more options, some providers say. Others suspect such vendors may not fully understand the complexities of healthcare data.

"These [healthcare vendors] have put a great deal of thought and design into providing service for an entire healthcare delivery system," the University of Wisconsin Hospitals & Clinics' Dassenko said. "The systems may not have some of the graphic tools [and] the user interface may not be nearly as slick as some PC-based systems, but the data integrity tools, the ability to move data across an organization, are really second to none."

Still, providers generally agree that no vendor inside or outside of the healthcare industry has all the answers to healthcare's data storage needs. "It's still very much a market that is in development," Tucker said. "So you need to be as cautious now in your decision-making as we were two years ago when we were really stepping out in faith." ∎
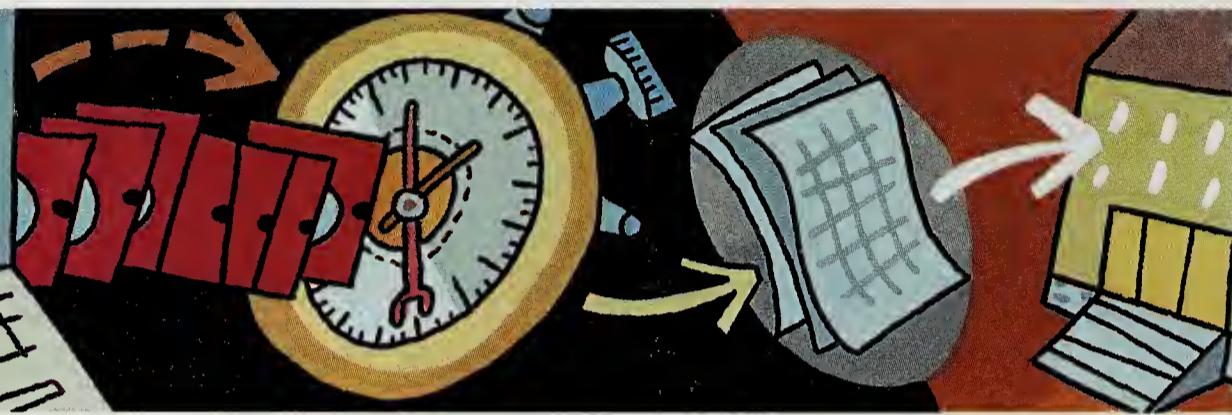
# Quick Hits

*Veteran data storage providers offer this wisdom*

**BUILD ROBUST NETWORKS.** Most are banking on ATM backbones and Ethernet to desktops running Pentium workstations for fast query response times.

**BACKUP.** Mirroring data in real time on backup processors is a popular choice.

**HL7 HAS LIMITS.** HL7-compliant systems and interface engines are helpful but don't eliminate arduous data mapping tasks.

**KNOW YOUR DATA.** Understand when it is most accurate in particular systems, especially in billing and financial apps, and when to load it into repositories or warehouses

**MUSE ABOUT MAINTENANCE.** What data needs to stay in the database over a patient's lifetime? Providers say they're not sure, but your vendor had better have some ideas, or maintenance gets expensive.

**KEEP STRUCTURES FLEXIBLE.** Who knows what new treatments or diseases clinicians will track tomorrow?

ing analytical data, such as the cost of services by diagnostic related groups, to support its referral and managed care businesses, Winschel said. The medical center is a major referral center for other providers in its home state of Tennessee, as well as in North Carolina and Kentucky. It also participates in the Mountain States Healthcare Organization, a managed care company.

To create a warehouse that Winschel expects will someday be shared by all of the Mountain States providers, Johnson City is working with Systems Techniques to build an Oracle-based data warehouse on a Unix platform on IBM's RS/6000 hardware.

expensive project that you need a lot of interim successes to prove to the board and to the administrative staff that there are benefits, there is a return on investment," he said.

Most providers were satisfied with the various reporting tools their vendors offer, such as Cerner's PowerChart at Hermann or SMS's Executive View analytical tool at West Jersey Health. Other providers are investigating online analytical processing (OLAP) tools for sophisticated reporting. The Ohio State University Hospitals in Columbus are planning a data warehouse and evaluating multidimensional OLAP

WATSON IS A FREELANCE WRITER IN CHICAGO SPECIALIZING IN HEALTHCARE AND TECHNOLOGY.

"When was the last time you thought about head or brain injury? The typical person just doesn't ordinarily think much about rehabilitation or rehab hospitals," said Thomas G. Widmer. But when a family member is severely head- or brain-injured, Web-savvy consumers naturally turn to the World Wide Web for answers. And the current dearth of information on the topic has led to a real business opportunity for Widmer and his colleagues, who can now offer these families a Web-driven information resource, while helping increase their organization's presence nationwide and even internationally.

Widmer isn't alone in his stratagems, of course. In fact, as vice president of planning and marketing at Siskin Hospital for Physical Rehabilitation in Chattanooga,

# *Tangled* BENEFITS

## *As healthcare providers weave their Web sites beyond brochureware, many are struggling to find a hard return on their investment*

### BY MARK HAGLAND

Tenn., he's joined the ranks of hundreds of healthcare organizations in the U.S. trying to develop uses for the burgeoning Web that make sense for consumers and themselves.

In May, after one year of preparation, Siskin's Web site went live, pending feedback and minor tinkering, before a public campaign was launched in July to promote the site. As such, it is among the few sophisticated rehab hospital Web sites in the U.S. And unlike many hospital-based organizations struggling with what value they can bring to the online world with Web sites, Siskin has a ready answer.

The questions are more complicated for most of the couple thousand hospital organization Web sites in existence, many of which are struggling to define a special ca-

chet or hook. Indeed, observers note, most hospital Web sites are only now shifting away from early iterations as static electronic brochures to become conveyors of healthcare information, services and online resources for health plan members.

The truth is, for many hospital organizations, Web site development has become something of a lemming-like rush for the cliffs. Yet few organizations with Web sites claim to have gained any kind of solid return on investment. So what's involved in developing a Web site? And where *does* the return come in?

For Widmer and his colleagues, the decision to plunge in was a no-brainer. The Web site development consulting firm Daniel+Douglas+Norcross (DDN) in Chat-

tanooga had offered to develop a Web site for Siskin at almost no cost to the hospital, treating Siskin as an alpha site to help build its book of business with other hospitals. So the actual cost to Siskin, Widmer said, amounted to no more than a few thousand dollars in out-of-pocket expenses.

At the same time, Daniel Fell, a partner at DDN, confirmed that development for the start-up cost about $15,000. He said other midsize community hospitals could spend $10,000 to $15,000 on the initial start-ups for their Web sites and 25% to 30% of that annually for maintenance. "Hospitals typically underestimate the funding they'll need to do this right," Fell said.

What's more, he added, when developing more complex Web sites for larger hospital systems and integrated health systems, such organizations should expect to spend $40,000 to $50,000 on the initial launch and 25% to 30% a year on maintenance.

## NECESSARY INVENTION

Crozer-Keystone Health System, an integrated health system that includes five hospitals and numerous non-inpatient facilities, was able to capitalize on a previous initiative in its Web site launch. With clinical services, support programs and offices across dozens of sites in Delaware County, Pa., just tracking where everything was and giving accurate information was becoming a major headache, said Ann Bagnell, vice president of marketing. "We had people coming in the door of the wrong hospital, calling the wrong hospital for immunizations, trying to find out which facilities had geriatric programs and so on," she explained.

That problem "led to a systemwide information initiative to correct the problem." The obvious next step seemed to be to gather all the data needed and centralize it on a systemwide Web site.

Bagnell tagged the initial cost of Crozer-Keystone's Web site launch at $15,000 but stressed that the relatively low cost was possible only because of the information initiative that preceded it, which would certainly have added thousands of dollars to the site's development price tag.

SISKIN HOSPITAL'S THOMAS G. WIDMER ADVISES HOSPITALS TO MAKE WEB SITES MORE THAN 'ANOTHER VANILLA ICE CREAM CONE'
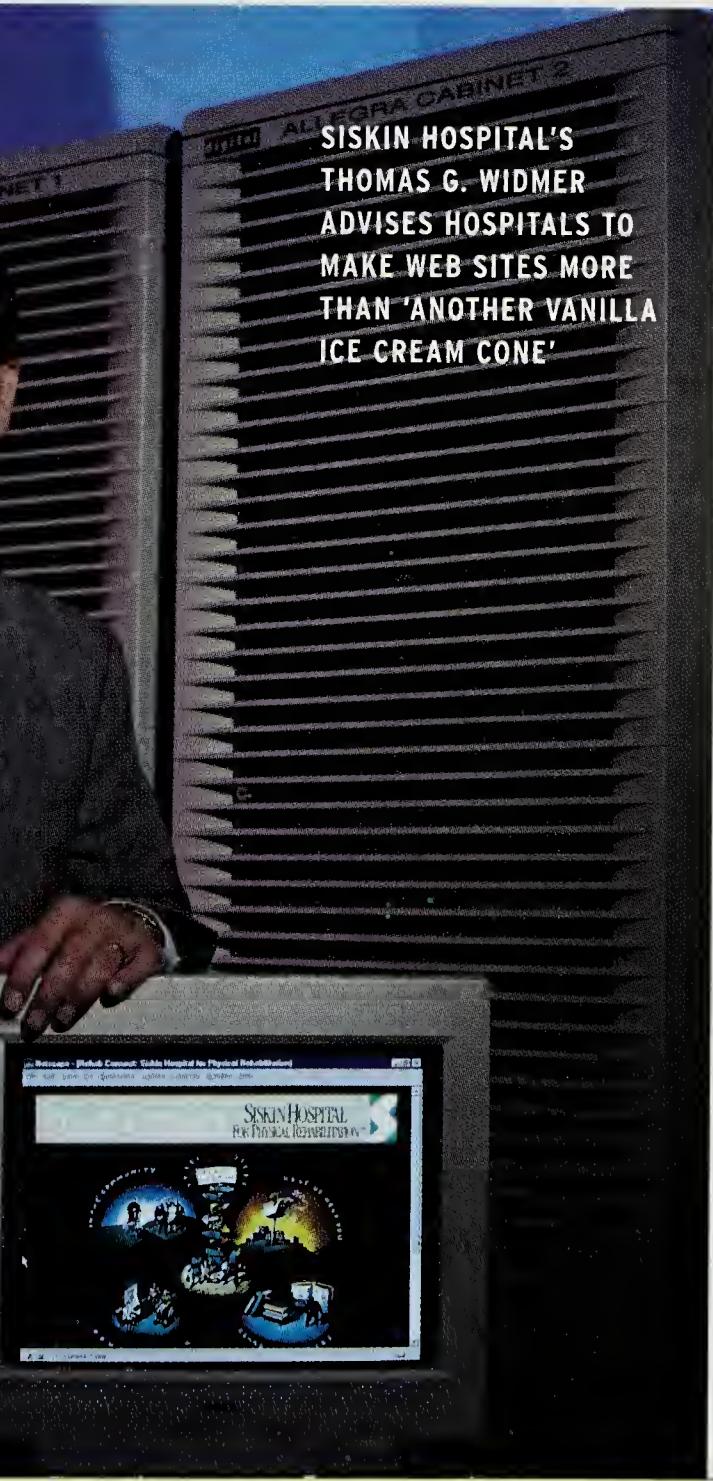
Nor did Crozer-Keystone stop there. The system soon found itself building in interactivity to allow people to register for educational classes, receive disease management and wellness/nutrition information in a push technology format and respond to surveys. Most important, the system is using its senior consumer site, Grand Slam Junction, to support its growing Medicare HMO. Soon, Crozer-Keystone officials hope to be able to provide important plan-related information for members.

As for staffing, Bagnell said "all the bits and pieces of many people's time . . . would probably amount to at least 1.5 [full-time staffers] to maintain the site editorially and technologically."

A great breakthrough for Crozer-Keystone, as for other hospital-based systems rushing into the Medicare risk market, will be interactivity as a health plan with senior members. In fact, industry observers say, that is probably the most significant use for hospital-based organizations. Healthcare Internet consultant John Hoben, president of Hoben Associates in Hamlin, N.Y., cited three key uses for hospital-based Web sites: the aforementioned health plan use, the ability to administer direct contracts with employers for their employees' insurance and the ability to provide specialized information unavailable elsewhere to steer consumers toward their organizations.

## LOWERING EXPECTATIONS

Apart from those uses, experts say, hospital executives and managers are beginning to realize that certifiably direct return on investment (ROI) is probably not a realistic goal. Health plans can put lists of participating providers on their Web sites, insert ever-changing benefits and coverage information and communicate with members about disease management programs — all direct enough returns on the investment. Other uses hospitals are pursuing, such as enhancing community and public image, must be reckoned softer returns.

Still, even soft ROI can be prized in a highly competitive hospital market that's only becoming more so over time. "Our approach has been to act as a rehab resource and in the process boost our profile as a rehab provider beyond our local market and

# WEB SITES OF INTEREST



www.crozer.org
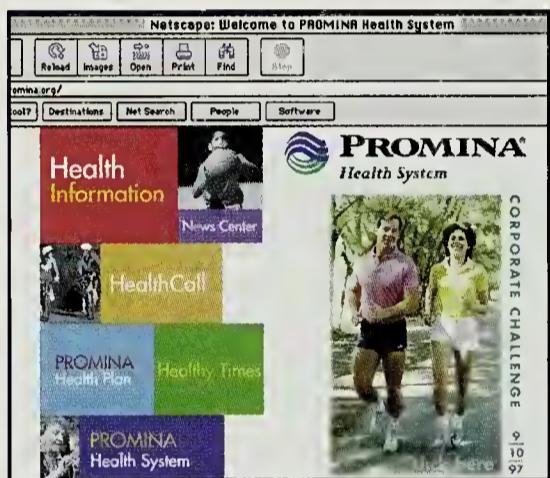


www.promina.org

even region," Siskin's Widmer said. "It's a soft return but one that we're confident is real." Indeed, since its public launch in July, Widmer reported, the number of "hits" on Siskin's site has increased to 200 a day, including sign-ons from as far away as Japan and New Zealand. Among the uses that have evolved are responding to clinical questions from consumers all across the country and abroad; referencing provider resources from inquiring consumers; offering an employment site as a recruiting tool; and facilitating electronic mail between families and their hospitalized loved ones.

Until now, Widmer himself has managed E-mail, but he and his colleagues are working out a more sophisticated method that will involve direct E-mail to the Web site for patients or caregivers to retrieve. Widmer is also bringing wider organizational resources into the overall process. Until now, he has been the sole Webmaster for Siskin. He said he expects other staffers to dedicate more time to Web site maintenance

in the near future. As for ongoing staff support, Widmer estimated that the time investment probably amounts to about one full-time employee on an ongoing basis.

With the rush of hospital organizations onto the Internet, "it's important not to duplicate health information venues that your organization already has in existence," said Cheryl Iverson, director of system communications at Promina Health System, an integrated health system with hospitals and facilities across metropolitan Atlanta. So Promina put its 700,000-circulation community health information newsletter, as well as educational materials, class and community offerings schedules and other information, on its Web site. She added, "Our next step will be to make sure there's a hot link to the National Cancer Institute or American Cancer Society, but we're not going to recreate every single piece of health information out there that already exists; that's the beauty of this medium."

The real key to success, DDN's Fell said, is to have a formal strategy, to understand the marketplace and to make sure Web site development continues to be driven by strategy and marketing considerations, not simply "played with" as a kind of IS toy.

The results of careful planning and strategic vision can prove quite satisfying. Just ask Siskin's Widmer: "I tell my staff that our role is kind of like what Kris Kringle did in *Miracle on 34th Street*," Widmer explained. "In that movie, Kris Kringle, who was working at Macy's during the holiday season, would tell people to go to [rival] Gimbel's if he thought Macy's price was too high for a particular product or if Macy's didn't sell it. What he was doing was providing value rather than selling something. And ultimately, people came back to Macy's because they trusted the store and knew they could get value from it.

"That's how we see it," he added. "We may refer them to a hospital in Washington, D.C., because they'll be better placed there, but in the end, they'll value us as an organization [and] as a trusted information resource. In the end," he emphasized, "you have to keep coming back to the deeper purpose of your Web site development — make it a meaningful activity. Don't just be another vanilla ice cream cone out there." ■

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